IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF NEW MEXICO

UNITED STATES OF AMERICA,

Plaintiff,

vs. **CR. No. 10-2734 JCH**

JOHN CHARLES McCLUSKEY,

Defendant.

MEMORANDUM OPINION AND ORDER

Currently before the Court is Defendant McCluskey's *Motion to Exclude Fingerprint Identification Evidence and Request for Daubert Hearing* [Doc. 419]. In his motion, Defendant John Charles McCluskey ("McCluskey") moves to exclude the Government's fingerprint identification evidence on the following grounds: (1) the Government failed to comply with its discovery obligations under Rule 16 ; (2) the evidence has no reliable scientific basis under *Daubert* and *Kumho Tire*; (3) the evidence does not satisfy Rule 702; and (4) the evidence is so weak that it lacks probative value, and any such value is substantially outweighed by the danger of unfair prejudice. On August 30-31, 2012, the Court held an evidentiary hearing on the motion, for which McCluskey was present. The Court heard testimony from Melissa Gishe, Bonnie Knoll, and Simon Cole, and admitted into evidence over 100 exhibits totaling thousands of pages.

After considering the motion, the Government's response [Doc. 482], McCluskey's reply [Doc. 534], the testimony and evidence presented at the hearing, and the relevant law, the Court concludes that McCluskey's motion to exclude fingerprint identification evidence should be denied. However, the Court will constrain the Government's expert witness from stating a conclusion that

she is able to identify a latent print to a single individual and to the exclusion of all others.

BACKGROUND

The Government intends to prove the following facts at trial. On August 4, 2010, law enforcement agents were dispatched to a location outside of Santa Rosa, New Mexico where a thirty-foot camper trailer stood burned down to its axles. Human remains later identified as those of Gary and Linda Haas, a retired Oklahoma couple, were found among the debris. Authorities located the Haas' pickup truck in Albuquerque, New Mexico later the same day. Among other items found within the pickup truck was a "Bounty" brand paper towel plastic wrapper. The wrapper was processed by the New Mexico Department of Public Safety ("NMDPS") crime laboratory and found to have workable latent fingerprints, meaning there was sufficient information within the prints for the examiner to make an identification or exclusion if a comparison were to be performed. Supervising Forensic Scientist Bonnie Knoll ("Knoll"), using the Automated Fingerprint Identification System ("AFIS"), concluded that one print from the paper towel wrapper matched McCluskey, while another matched his co-defendant, Tracey Province. Knoll then examined all of the latent fingerprints, as well as numerous items of evidence including firearms and ammunition, recovered by police investigators. On those items of evidence, which included the Hasses' pickup truck, Knoll identified fingerprints belonging to both of the Hasses, as well as to Province, McCluskey, and a third co-defendant, Casslyn Welch. As to other latent fingerprints found on items of evidence, Knoll will testify that certain persons either can or cannot be eliminated as the source of those prints.

DISCUSSION

I. The Government Has Met Its Rule 16 Discovery Obligations

McCluskey contends that the Government has failed to describe the witnesses' opinions or

the bases and reasons for those opinions as required by Rule 16(a)(1)(G). Rule 16 requires the Government to give a defendant only "a written summary" including "the witness's opinions, the bases and reasons for those opinions, and the witness's qualifications." Fed. R. Crim. P. 16(a)(1)(G). Rule 16 disclosure is designed to give the opposing party notice, permitting preparation for cross-examination and presentation of opposing experts. *See* Fed. R. Crim. P. 16 advisory committee's notes to 1993 amendment. Detailed, extensive discussion is not required in the Rule 16 summary: "Although the summary required by Rule 16 provides the defense with some notice, the requirement of setting forth 'the bases and reasons for' the witnesses' opinions does not track the methodological factors set forth by the Daubert Court." Margaret A. Berger, *Procedural Paradigms for Applying the Daubert Test*, 78 Minn. L. Rev. 1345, 1360 (1994).

On September 9, 2011, the Court entered a Scheduling Order [Doc. 220] setting January 20, 2012 as the "[d]eadline for government to complete all summaries and provide all reports on all experts, with all foundational data to be disclosed by February 17, 2012." The Government did not meet this deadline, but on January 30, 2012, the Government filed its *Notice of Intention to Offer Expert Testimony* [Doc. 261]. That document did not set forth the Government experts' summaries, reports, and foundational data as required by the Scheduling Order. Instead, the Government stated that it was providing a list of experts and the subject area of their expected testimony, and that it would provide the experts' credentials, summaries, and reports, as well as foundational information, to McCluskey at an undefined later date. With regard to the fingerprint identification testimony presently at issue, the Government's Notice merely identified "Bonnie Knoll, Forensic Scientist, New Mexico Department of Public Safety Forensic Laboratory. Testimony will include the analysis of latent fingerprint evidence." Doc. 261 at 3.

On March 30, 2012, the Government filed its *Supplemental Notice of Intent to Offer Expert*

Testimony [Doc. 386]. That Notice provided the following additional information about Ms. Knoll and her testimony:

> The United States intends to call Supervising Forensic Scientist, New Mexico Department of Public Safety Forensic Laboratory, Bonnie Knoll, who is specialized in Latent Prints examination. Ms. Knoll is expected to testify regarding her experience since 1999 in analyzing latent prints. She is also expected to testify regarding the numerous seminars and continuing education she has attended to date in enabling her to conduct reliable analysis regarding latent prints. The basis for her opinion, and her qualifications have been provided as discovery to Defendant and his counsel. Her report was provided to Defendant and his counsel on December 23, 2010 (bates range 1237-1247; 1399-1404; 2304- 2406); February 24, 2011 (bates range 2546-2549); and April 15, 2011 (bates range 3719-3722). Ms. Knoll is also expected to testify about the use of Amido Black to develop latent fingerprints in blood on the pickup truck, as well as the use of Cyanoacrylate fumes to fix the latent prints in the pickup truck, and the results that were obtained from this process.
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> Qualified as an expert in latent print examination in numerous courts, she is expected to testify in this case as to how she visually examined the latent lifts taken in this case for identifiable latent impressions. She is expected to testify that numerous latent prints were not suitable for comparison. She is expected to testify regarding those latent lifts that were suitable for comparison and how those were compared with the standards from Defendant, Casslyn Welch, Tracy Province, Gary Haas and Linda Haas. Ms. Knoll is expected to testify regarding the many comparisons made between the identifiable latent impressions and those standards. She is also expected to testify regarding the submission of certain identifiable latent impressions into the AFIS and IAFIS databases and what results were obtained. Her testimony will include her expert opinion and specialized knowledge in latent print examination, derived from her education, training, and professional experience.

[Doc. 386, p. 5-6]. Ms. Knoll's October 4, 2010 report, *see* Gov't Ex. 64, referenced in the first paragraph quoted above, sets forth the following information about her opinions, all of which McCluskey challenges in his *Daubert* motion currently before the Court:

> (1) "Item 8 contains multiple areas of ridge detail; five of which were entered into and searched through the AFIS database. Two of the five impressions searched through AFIS with positive results to the number eight and nine fingers of John Charles McCluskey.";
> (2) "Item 8 contains eight impressions identified as follows: 8A and 8H both identified as the number ten finger of Tracy Province, 8B and 8E both identified as the number nine finger of Province, 8C identified as the number eight finger of John McCluskey, 8F as the number six finger of Province (result of an IAFIS search-prior to receiving known standards), 8G identified as the number eight finger of

Province.";
(3) "Item 22 contains four impressions; the comparative results are as follows: 22A identified as the number eight finger of Linda Haas, 22B identified as the number two finger of L. Haas, 22C and 22D can be eliminated from all three suspects, but not from the victims as no palm standards are available.";
(4) "Item 23 contains one impression, items 23A which is identified as the number three finger of L. Haas.";
(5) "Item LP3 cannot be eliminated from McCluskey, Province, Welch, or L. Haas, but can be eliminated from Gary Haas.";
(6) "Item LP4 is identified as the number seven finger of G. Haas.";
(7) "Item LP7 contains two impressions, one of which cannot be eliminated from Province, Welch, or L. Haas, but can be eliminated frm McCluskey and G. Haas and the second of which cannot be eliminated from any of the standards due to their quality.";
(8) "Item LP10 is identified as the number three finger of G. Haas.";
(9) "Item LP11 is identified as the number eight finger of G. Haas.";
(10) "Item LP12 is identified as the number three finger of G. Haas.";
(11) "Item 1B39A contains one impression, item 1B39A-A which can only be eliminated from G. Haas.";
(12) "Item 1B39A-2 contains two impressions, item 1B39A-2A identified as the number two finger of Casslyn Welch and 1B39A-2B identified as the number six finger of Welch.";
(13) "Item 1B39A-3 contains one impression, item 1B39A-3A identified as the number two finger of Welch.";
(14) "[A] fourth impression [on item 15] can be eliminated from Province, McCluskey, and Welch.";
(15) "Item 1B34-2 contains three impressions, two of which are identified as the number nine and two finger of Welch; the third cannot be eliminated from Welch.";
(16) "Item 1B34-6 is identified as the left palm of McCluskey.";
(17) "Item 1B34–7 is identified as the number eight finger of McCluskey.";
(18) "item 1B34-9 contains two impressions, one of which cannot be eliminated from Welch, and the second of which is identified as the palm of Welch.";
(19) "Items 8F and 15B were entered into and searched through the IAFIS data based as well; 8F searched with positive results to the number six finger of Province and item 15B searched with negative results."

Gov't Ex. 64 at 4. The Government also provided McCluskey with foundation material for Knoll's opinions. These include chain of custody documents, substantial case notes describing the latent prints she examined, and digital images of the prints in question. Gov't Ex. 64. Knoll's report states that identifiable fingerprint impressions were compared against the known fingerprint and palm standards for McCluskey, his co-defendants, and the Haases. McCluskey complains that the

foregoing information is not enough about the process of identification that Knoll employed, and that the Government should have provided him with "side-by-side comparison photographs of the latents and known prints," and "photographs where points of similarity or dissimilarity are noted." Doc. 419 at 6. He also asserts that the Government should have provided him with proficiency tests for T. Zehringer, who reviewed Knoll's conclusions. According to McCluskey, the Court should exclude the fingerprint evidence because the Government has not met its burden under Rule 16. Doc. 419 at 9.

The Tenth Circuit rejected similar arguments that a Rule 16 disclosure failed to sufficiently convey an expert's opinions and the bases and reasons for those opinions. In *Brown*, the government provided a fingerprint examiner's CV and report, and the summary of testimony stated that the expert "will testify that she compared the defendant's known fingerprints found on fingerprints [sic] cards with a latent fingerprint found" on a job application, and "will testify the latent fingerprint on the job application is the defendant's fingerprint." *United States v. Brown*, 592 F.3d 1088, 1089 n.2 (10th Cir. 2009). At trial, the expert testified that she found fourteen identical points of comparison between the defendant's known print and the latent print found at the crime scene. *Id.* at 1089. The Tenth Circuit "was unpersuaded by Brown's argument that because the government's summary failed to mention fourteen identical points of comparison or specifically describe the expert's methodology, the summary was deficient." *Id.* at 1091. The Tenth Circuit held that the government's disclosure substantially complied with Rule 16 because the summary and report stated the expert's opinion and described the anticipated testimony—that "the fingerprint found at the scene of the crime matched Brown's." *Id.* at 1091. The Tenth Circuit opinion in *Brown* shows that Rule 16 disclosures are not required to include the extensive and exhaustive level of detail and information for which McCluskey is arguing. The Court finds that the Government's disclosures

meet the requirements of Rule 16.

McCluskey also asserts that the Government's notice was late under the Court's Scheduling Order. [Doc. No. 442, p. 18] It is not necessary for the Court to consider this issue further other than to observe that it is McCluskey's burden to "demonstrate" prejudice—either from the timing or the adequacy of the Government's disclosure. *See United States v. Kenyon*, 481 F.3d 1054, 1062 (8th Cir. 2007). Summarily asserting prejudice does not satisfy McCluskey's burden to demonstrate prejudice. *See United States v. Apperson*, 441 F.3d 1162, 1204 (10th Cir. 2006) (regarding denial of motion to continue). The purposes of Rule 16 include minimizing surprise from unexpected expert testimony and allowing a party to prepare for cross-examination and presentation of opposing experts. Fed. R. Crim. P. 16 advisory committee's note to 1993 amendment. McCluskey has not demonstrated that the purposes of the Rule are frustrated. *See United States v. Thornton*, 642 F.3d 599, 606 (7th Cir. 2011); *United States v. Stevens*, 380 F.3d 1021, 1026 (7th Cir. 2004) (prejudice under Rule 16 requires showing of undue surprise and inadequate opportunity to prepare defense). McCluskey's very thorough pleadings and exhibits in support of his motion to exclude DNA evidence show that he has had adequate notice to enable him to prepare a defense. In addition, the Court does not find any indication that the Government has acted in bath faith. Accordingly, the Court will not exclude the Government's fingerprint evidence on the grounds that it violated Rule 16.

II. Latent Fingerprint Identification Generally

Latent prints (or unknown samples) are friction ridge impressions from fingerprints, footprints, or palm prints, which are left unintentionally on items such as those found at a crime scene. An exemplar, or known sample, is one where prints are taken "under controlled conditions from a known subject using ink on paper or digitally with a livescan device." *See* Gov't Ex. 85,

Bradford T. Ulery, et al., *Accuracy and Reliability of Forensic Latent Fingerprint Decisions*, Proceedings of the National Academy of Sciences ("PNAS"), May 10, 2011, vol. 108, no. 19 at 1. Latent prints are then compared to the exemplar by examiners, who usually apply the ACE-V method of analysis. ACE–V is an acronym for analysis, comparison, evaluation, and verification. *United States v. Herrera*, 704 F.3d 480, 484 (7th Cir. 2013); Tr. 8/30/2012 [Doc. 680] at 19-20.

The ACE-V method has been described as follows:

> The process begins with the analysis of the unknown friction ridge print (now often a digital image of a latent print). Many factors affect the quality and quantity of detail in the latent print and also introduce variability in the resulting impression.... If the examiner deems that there is sufficient detail in the latent print (and the known prints), the comparison of the latent print to the known prints begins.
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> Visual comparison consists of discerning, visually "measuring," and comparing—within the comparable areas of the latent print and the known prints—the details that correspond. The amount of friction ridge detail available for this step depends on the clarity of the two impressions. The details observed might include the overall shape of the latent print, anatomical aspects, ridge flows, ridge counts, shape of the core, delta location and shape, lengths of the ridges, minutia location and type, thickness of the ridges and furrows, shapes of the ridges, pore position, crease patterns and shapes, scar shapes, and temporary feature shapes (e.g., a wart).
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> At the completion of the comparison, the examiner performs an evaluation of the agreement of the friction ridge formations in the two prints and evaluates the sufficiency of the detail present to establish an identification (source determination). Source determination is made when the examiner concludes, based on his or her experience, that sufficient quantity and quality of friction ridge detail is in agreement between the latent print and the known print. Source exclusion is made when the process indicates sufficient disagreement between the latent print and known print. If neither an identification nor an exclusion can be reached, the result of the comparison is inconclusive. Verification occurs when another qualified examiner repeats the observations and comes to the same conclusion, although the second examiner may be aware of the conclusion of the first.

Herrera, 704 F.3d at 484. (quoting National Research Council of the National Academy of Sciences, *Strengthening Forensic Science in the United States: A Path Forward* 137–38 (2009) ("NAS 2009 Report").

Often, when there is no known sample against which to compare a latent print, the examiner

submits the latent print to an Automated Fingerprint Identification System ("AFIS"), a computerized database containing known fingerprint samples. Doc. 680 at 44-45. The FBI controls an AFIS (know as the Integrated Automated Fingerprint Identification System, or IAFIS) containing prints from approximately 70 million individuals, and many states and some local governments have their own AFIS systems as well. *Id*. In order to search the AFIS database, the examiner first scans in the unknown latent print and encodes the characteristics of the print that he or she has observed. *Id.* at 45. Then, using complex mathematical algorithms, the computer compares the latent print to the exemplars in its database and returns a list of candidates for comparison. *Id*. at 44-45. Then, using the ACE-V technique described above, the examiner compares the unknown latent prints to the possible matches suggested by AFIS. *Id*. at 46.

ACE-V includes both qualitative and quantitative aspects. Proper application of ACE-V methodology includes observations, measurements, assessments, decision making and documentation, which are enabled by the education, training, skill and experience of the examiner. *See Standards for Examining Friction Ridge Impressions and Resulting Conclusions*, Scientific Working Group on Friction Ridge Analysis, Study and Technology, (SWGFAST) ver. 1.0, October 26, 2011.

III. Admissibility of Latent Fingerprint Identification Generally

A. Legal Standard

The Supreme Court has held that trial courts have a "gatekeeping responsibility" in that they must "ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579, 589 n. 7 (1993) (citing authorities). In *Daubert*, the Supreme Court provided a list of specific factors bearing on reliability

that trial courts could consider in executing the gatekeeping obligation. These so-called *Daubert* factors can be summarized as follows: (1) whether a theory or technique has been or can be tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) the technique's known or potential rate of error and the existence and maintenance of standards controlling the technique's operation; and (4) whether a particular technique or theory has gained general acceptance in the relevant scientific community. However, the *Daubert* Court did not "presume to set out a definitive checklist or test," recognizing instead that "[m]any factors" might bear on the Rule 702 inquiry. *Daubert*, 509 U.S. at 593.

In *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999), the Supreme Court addressed the question of "how *Daubert* applies to the testimony of engineers and other experts who are not scientists." *Id*. at 141. The Supreme Court clarified that the "gatekeeping" obligation applied "not only to testimony based on 'scientific' knowledge, but also to testimony based on 'technical' and 'other specialized' knowledge." *Id*. However, while *Kumho Tire* held that trial courts considering the reliability of the testimony of non-scientists could consider the *Daubert* Factors, it reminded trial courts that they were not required to do so because the "list of factors was meant to be helpful, not definitive." *Id*. at 151. "[T]he test of reliability is flexible, and *Daubert*'s list of specific factors neither necessarily nor exclusively applies to all experts or in every case. Rather, the law grants a district court the same broad latitude when it decides how to determine reliability as it enjoys in respect to its ultimate reliability determination." *Id*. at 141-42, 119 S. Ct. 1167. Many courts have recognized that the list of factors the Supreme Court outlined in *Daubert* "may not perfectly fit every type of expert testimony, particularly technical testimony based primarily on the training and experience of the expert." *United States v. Monteiro*, 407 F.Supp.2d 351, 357 (D. Mass. 2006) (compiling cases).

In *United States v. Baines*, 573 F.3d 979, 889-90 (10th Cir. 2009), the Tenth Circuit observed that it does not consider fingerprint identification evidence to be strictly "scientific," in the *Daubert* sense, but rather based upon technical knowledge:

> We also remain mindful that *Daubert* addressed evidence that was claimed to be scientific. *Kumho Tire* held that the trial court's gatekeeping function applies to all expert testimony and noted that there is no clear line separating "scientific" knowledge from technical knowledge or knowledge based on experience. Nonetheless, the Court there said that " some of *Daubert*'s questions can help to evaluate the reliability even of experience-based testimony," 526 U.S. at 151, 119 S.Ct. 1167 (emphasis added), strongly suggesting that the Court realized that some of the *Daubert* factors may be less helpful when the evidence under consideration is not scientific in the strict sense. Although the importance of the distinction is thus uncertain, we agree with the Third Circuit that fingerprint analysis is best described as an area of technical rather than scientific knowledge.

In 2000 and again in 2011, Rule 702 was amended in response to *Daubert* and "the many cases applying [it], including *Kumho Tire* ...." Advisory Committee Notes relating to the 2000 Amendments to Rule 702. In its current form, Rule 702 provides: A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

> (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
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> (b) the testimony is based on sufficient facts or data;
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> (c) the testimony is the product of reliable principles and methods; and
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> (d) the expert has reliably applied the principles and methods to the facts of the case.

Fed. R. Crim. Pro. 702.

B. Analysis

McCluskey challenges the admissibility of the expert fingerprint identification opinion insofar as it asserts that a particular latent print can be matched to a known individual's print to the

exclusion of all other individuals. *See* Doc. 419 at 13. This individualized identification, Defendant contends, is based on a theory that has not been proven scientifically, cannot be verified, and is vulnerable to the subjective judgment of the examiner. In support of his arguments, Defendant points to discussions in the 2009 National Research Council's report titled *Strengthening Forensic Science in the United States: A Path Forward* ("NRC Report") (Deft's CD Ex. 3). The NRC Report focused on the challenges and limitations faced by a number of forensic science disciplines, including autopsies and medical examinations, DNA analysis, controlled substance analysis, toolmark and firearms identification, latent fingerprint analysis, and others. It identified deficiencies in the forensic sciences and concluded that generally, the forensic identification disciplines, other than nuclear DNA analysis, lack sufficient grounding in scientific research to identify with certainty whether a "match" between crime scene evidence and a known sample has been achieved. NRC Report, at 12-13, 87.

Kumho Tire, however, instructs that the reliability of expert testimony does not turn on the grounding of the expert's opinion in scientific principles. Instead, the Supreme Court stressed that a district court has "considerable leeway in deciding in a particular case how to go about determining whether particular expert testimony is reliable." *Kumho Tire*, 526 U.S. at 152. Moreover, *Kumho Tire* makes clear that expert testimony on matters of a technical nature or related to specialized knowledge, albeit not scientific, can be admissible under Rule 702, so long as the testimony satisfies the Court's test of reliability and the requirement of relevance. *Id*. at 149; *see also United States v. Mitchell*, 365 F.3d 215, 234 (3d Cir. 2004) (holding that "*Kumho Tire* extended *Daubert*'s 'general principles' to all of 'the expert matters described in Rule 702'" and applying those principles to determine the admissibility of expert testimony on fingerprint identification). The question currently before the Court is whether the opinions proffered by the Government's

fingerprint identification expert are reliable according to the principles of *Kumho Tire*. Thus, this Court first will analyze the reliability of fingerprint testimony generally based on the applicable *Daubert* factors, and then turn to Knoll's proposed opinion testimony.

1. Whether the Theory Can Be Tested

The first factor discussed in *Daubert* and *Kumho* asks whether a methodology can be tested and whether it has been tested. Several federal courts have held that the underpinnings of the ACE-V method are open to testing, and this Court agrees. For example, in *United States v. Baines*, 573 F.3d 979, 990-991 (10th Cir. 2009), the court stated that "the core proposition—that reliable identifications may be made from comparison of latent prints with known prints—is testable." *See also, United States v. Mitchell*, 365 F.3d 215, 235-36 (3d Cir.2004). In fact, it appears to the Court that there are at least three areas crucial to the reliability of fingerprint examination that can be tested. First, latent fingerprint analysis rests on two hypotheses—that fingerprints are unique to an individual and that fingerprints do not change over the course of an individual's life. Second, that it is possible, at least in principle, to learn "the prevalence of different ridge flows and crease patterns" and "the discriminating value of the various ridge formations and clusters of ridge formations" across individuals. *See* NRC Report at 144. This information would facilitate estimates of the reliability of the conclusion that two specific fingerprints are from the same individual. Finally, it is possible to test the reliability of conclusions reached by a given fingerprint analyst through controlled examinations.

In addition, at least some actual testing and research has been performed in the areas mentioned above. Testing of the uniqueness and persistence hypotheses dates to the eighteenth century and includes, among other things, a 1982 study of twins, and a more recent 2007 study of twins. *See, e.g.*, C.H. Lin. et al., *Fingerprint Comparison. I: Similarity of Fingerprints*, JOURNAL

OF FORENSIC SCIENCES, JVSCA, Vol. 27, no. 2, April 1982, pp. 290-304 and Sargur N. Srihari, et al., *Discriminability of Fingerprints of Twins*, JOURNAL OF FORENSIC IDENTIFICATION, Vol. 58 (2008), both on a CD attached as Gov't Ex. 86. *See also Mitchell*, 365 F.3d at 236 & n. 16 (discussing a test of 50,000 fingerprints for uniqueness). Some recent statistical models also bear on the distribution of particular ridge characteristics across the population as a whole. *See, e.g.*, Gov't Ex. 86, Sargur N. Srihari, et al., *Individuality of Fingerprints: Comparison of Models and Measurements* (June 14, 2007). Finally, several studies of the accuracy of the performance of fingerprint examiners have been performed. The most recent such study was published in May 2011. *See, e.g.*, Gov't Ex. 85, Bradford T. Ulery, et al., *Accuracy and Reliability of Forensic Latent Fingerprint Decisions*, 108 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES 7733 (May 10, 2011). Another study looked at the effect of potential bias on the accuracy of fingerprint examiners. *See* Glenn Langenburg, et al., *Testing for Potential Contextual Bias Effects During the Verification Stage of the ACE-V Methodology when Conducting Fingerprint Comparisons*, JOURNAL OF FORENSIC SCIENCE, Vol. 54, No. 3 (May 2009) at 571.

According to McCluskey, the "core proposition" of latent fingerprint analysis has been tested and proven false, or at least it has not been adequately tested within the meaning of *Daubert*. In support of this argument, he relies primarily on the NRC Report and the Declaration (Deft's Ex. GG) and testimony of Simon Cole, Ph.D., who was qualified at the hearing as an expert on the studies and literature in the field of fingerprint evidence, *see* Tr. 12/31/2012 [Doc. 683] at 169. In his Declaration at paragraph 10, Cole states that "there is no systematic, controlled validation study that purports to estimate the accuracy of latent print individualization." He relies, in part, on the NRC Report, which states that it could find only "limited information" about the accuracy and reliability of latent print analysis, for this conclusion. NRC Report at 142. However, since 2009

when the NRC Report was released, Ulery, *et al.*, published "Accuracy and reliability of forensic latent fingerprint decisions," *supra*, the "first large-scale study of the accuracy and reliability of latent print examiners' decisions, in which 169 latent print examiners each compared approximately 100 pairs of latent and exemplar fingerprints from a pool of 744 pairs." Gov't Ex. 85 at 1. In this complex study, the results showed that five examiners made false positive errors for an overall false positive rate of 0.1%, while 85% of examiners made at least one false negative error for an overall false negative rate of 7.5%.. *Id*. In a smaller study offered by McCluskey, six fingerprint analysts participated in a series of tests to measure the accuracy, precision, reproducibility of the ACE-V method. *See* Deft's Ex. PPP, Glenn Langenberg, *A Performance Study of the ACE-V Process: A Pilot Study to Measure the Accuracy, Precision, Reproducibility, Repeatability, and Biasability of Conclusions Resulting from the ACE-V Process*, JOURNAL OF FORENSIC IDENTIFICATION, Vol. 59 (2009). The results showed that the examiners performed with 100% accuracy in identification of a match, and 86% accuracy where the examiners excluded a possible match. *Id*. Thus, considerably more testing of the ACE-V method has been done since the NRC Report was released in 2009. McCluskey also relies on the Brandon Mayfield case, in which four FBI fingerprint examiners inaccurately identified Brandon Mayfield as the source of latent prints found in connection with a Madrid terrorist bombing, to argue that "the 'core proposition' of latent fingerprint analysis has been tested and proven false." Doc. 534 at 4. While the Brandon Mayfield case, along with other weaknesses in fingerprint testing may provide fertile ground for cross examination of the Government's fingerprint identification expert, it alone does not outweigh the testing that has been conducted in this area.

Accordingly, the Court concludes that the first *Daubert* factor weighs slightly in support of admissibility. *See also Baines*, 573 F.3d at 990 (finding that first *Daubert* factor weighed slightly

in favor of admissibility, stating "unquestionably the [ACE-V] technique has been subject to testing, albeit less rigorous than a scientific ideal, in the world of criminal investigation, court proceedings, and other practical applications, such as identification of victims of disasters. Thus, while we must agree with defendant that this record does not show that the technique has been subject to testing that would meet all of the standards of science, it would be unrealistic in the extreme for us to ignore the countervailing evidence.").

2. Peer Review and Publication of the ACE-V Method

The second factor in *Daubert* and *Kumho* concerns whether a methodology has been subject to publication and peer review. It appears that, compared to some other areas of forensic science, publications regarding latent fingerprint analysis are relatively few in number. The government offered digital copies of roughly thirty publications and studies touching on various aspects of the field. *See* Gov't Ex. 86. Some of these it also offered into evidence in hard copy format at the hearing. However, it is unclear which of these sources are peer-reviewed. At the August 30, 2012 hearing on the motion, the Government asked its expert witness, Melissa Gische, about peer review of publications on fingerprint evidence. *See* Doc. 680 at 18, 22. Unfortunately, the Government did not make a clear record in identifying the particular articles and publications that it was inquiring about, often referring to articles not by exhibit number or title, but rather by the last name of the author and/or by year. At one point, after a discussion about articles on fingerprint analysis, the Government asked Gische if "all of the articles and studies on the ACE-V are [] also peer reviewed?" to which Gische responded, "Yes." *Id*. at 22.

Subsequently, McCluskey's expert, Dr. Cole, testified on the subject of peer-reviewed studies. *See* Doc. 683 at 184-85. He testified as follows:

A. [W]e are just seeing the -- the first studies measuring the accuracy of latent print

> identification, and they are being submitted to peer-reviewed journals and subjected to peer review. And presumably, the next step will be that people will read them and study them. And perhaps they will replicate them and try to do similar studies themselves. Perhaps they will publish criticisms of the studies in terms of the methods that they use. Perhaps they'll design other studies that improve upon the methods. So that process is certainly underway.
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> Q. Is it at the point where you can say that the literature has been subjected -- the few articles that were cited by Ms. Gische, are we at the stage to say that those articles have been subjected to the kind of peer review that's normally part of the process?
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> A. Well, in the literal sense they were peer-reviewed and published. So those -- those first studies have certainly done that. In the sense that the *Daubert* prong peer review and publication is really a proxy for the scrutiny of the scientific community, I think one also wants to see how the scientific community reacts to these studies now that they are in the literature.

Based on the foregoing testimony by two experts, Gische and Cole, the Court concludes that there are some publications that concern the reliability of latent fingerprint analysis, at least a few of which are peer-reviewed. As a result, this factor is either neutral or weighs slightly in favor of admissibility. *See, e.g., Boyd* v. City and County of San Francisco, 576 F.3d 938, 946 (9th Cir. 2009) (affirming the admission of evidence of a theory supported by fourteen publications, ten of which were peer-reviewed); *United States v. Prime*, 431 F.3d 1147, 1153–54 (9th Cir. 2005) (admitting handwriting analysis evidence in part because of publications that were peer reviewed by other forensic scientists).

3. Known or Potential Error Rate

Daubert directs that, "in the case of a particular scientific technique, the Court ordinarily should consider the known or potential rate of error." 509 U.S. at 594, 113 S.Ct. 2786.

There are two types of errors in fingerprint identification work. The first, a false positive, results when an examiner concludes that two prints came from the same source when, in fact, they

did not. Doc. 680 at 47. In contrast, a false negative results when the examiner concludes that two prints are from difference sources when, in fact, they were the same source. *Id*. at 47-48.

"The [ACE–V] method, and the performance of those who use it, are inextricably linked, and both involve multiple sources of error (e.g., errors in executing the process steps, as well as errors in human judgment)."). *See* NRC Report at 143. Similarly, Gische testified that because "humans are involved in the latent print examination process, there is always going to be the potential for an error to occur." *Id*. at 47. Gische further testified that "There is no single number . . . that is a predictive error rate for all types of latent print examinations." *Id*. at 48. However, there have been some studies performed that shed at least some light on the issue. Most significantly, the May 2011 study by Ulery, et al., (discussed *supra*) of the performance of 169 fingerprint examiners revealed a total of six false positives among 4,083 comparisons of non-matching fingerprints for "an overall false positive rate of 0.1%." *See* Ulery et al., *supra*, at 3. *See also* Doc. 680 at 48-50. This false positive rate is marginally higher than the rate the FBI estimated in *United States v. Baines*, 573 F.3d 979, 990-91 (10th Cir. 2009) (recounting testimony suggesting that the FBI's error rate was 1 in 11 million cases). Ulery, *supra*, also found an overall false negative rate of 7.5%. According to Gische, the training of examiners and quality procedures they use are "geared toward preventing false identifications" and that the "common thought process" among examiners is that "if an error is going to be made, it's going to be a false exclusion." Doc. 680 at 52-53.

Similarly, the Seventh Circuit recently observed that "errors in fingerprint matching by expert examiners appear to be very rare. Of the first 194 prisoners in the United States exonerated by DNA evidence, none had been convicted on the basis of erroneous fingerprint matches, whereas 75 percent had been convicted on the basis of mistaken eyewitness identification." *United States v. Herrera*, 704 F.3d 480, 487 (7th Cir. 2013) (citing Greg Hampikian, et al., *The Genetics of*

Innocence: Analysis of 194 U.S. DNA Exonerations, 12 ANNUAL REV. OF GENOMICS AND HUMAN GENETICS 97, 106 (2011).

McCluskey's expert witness, Cole, makes the point that the actual error rate in the field is unknown, and potentially much higher, than those detected in the controlled studies described above. *See* Cole Decl., Deft's Ex. HH, ¶ ¶ 8-10; Simon Cole, *More Than Zero: Accounting for Error in Latent Fingerprint Identification*, THE JOURNAL OF CRIMINAL LAW AND CRIMINOLOGY, Vol. 95, No. 3 (2005) (discussing twenty-two cases of known fingerprint misattribution and positing that "they are most likely only the tip of the proverbial iceberg"). He contends that erroneous fingerprint identifications have been discovered fortuitously, and that this suggests that countless other mistakes by fingerprint examiners remain undetected. *See also* Doc. 683 at 122-25. Thus, he concludes that the results of tests of fingerprint examiners under controlled conditions do not accurately portray the methodology's true rate of error. Cole also testified that the AFIS system can create bias, and therefore create an increased danger of identification error. *Id*. at 130-31 As Cole pointed out, if the true source of the latent print is not in the AFIS database, then there is an increased risk that the database will suggest a match that is similar enough to the unknown latent to create an erroneous identification but which is not the true source. *Id*. *See also* Deft's Ex. EEEEEE, I. Dror, *The Use of Technology in Human Expert Domains: Challenges and Risks Arising form the Use of Automated Fingerprint Identification Systems in Forensic Science*, LAW, PROBABILITY AND RISK (Jan. 22, 2010); Ulery, et al., *supra*, at 1 ("Exemplars selected by an AFIS are far more likely to be similar to the latent than exemplars selected by other means, potentially increasing the risk of examiner error.").

The motion currently before the Court presents a scenario similar to that in McCluskey's motion challenging firearm identification evidence. There, as here, there is evidence of error rates

based on tests performed on examiners in a scholarly setting, but no evidence of a "real world" error rate. *See* Memorandum Opinion and Order, Doc. 806, at 16. In both instances, the information that does exist shows a relatively low error rate—here, a rate of false positives (the most dangerous type of error) of less than 1%. And, as with the firearm evidence, there are valid criticisms of the existing data which are fertile ground for cross examination. Accordingly, with regard to fingerprint evidence, the Court finds that this factor weighs in favor of admissibility, but only slightly so.

4. Existence and Maintenance of Standards

The next factor asks the Court to assess whether there are standards governing the training of fingerprint examiners and the techniques they apply. The Government elicited very little testimony in support of this factor. Gische testified that quality of examiner training and testing is important to the accuracy of the process, as is the quality of the standard operating procedures of the laboratory within which the examiner is working. Doc. 680 at 55-56. Gische also noted the importance of the verification and review of fingerprint examinations, as well as internal and external audits. *Id*. at 56. Gische testified that these standards come from SWGFAST and are made widely available to the fingerprint examination community, though they are not mandatory. Doc. 680 at 93-95.[1]

The Scientific Working Group on Friction Ridge Analysis, Study and Technology ("SWGFAST"), which is composed of fingerprint specialists from numerous local, state, and federal

[1] In addition, the New Mexico Department of Public Safety forensics laboratory that conducted the fingerprint examinations in this case is accredited by "ASCLD/LAB," the American Society of Crime Laboratory Directors/Laboratory Accreditation Board and operates under standards set forth by it and by ISO, the International Standards Organization. *See* Doc. 680 at 197. The NMDPS laboratory also operates under its own Standard Operating Procedures that set forth the ACE-V method. *Id*. at 198-99.

law enforcement agencies, has established standards for fingerprint analysis for almost twenty years. *United States v. Aman*, 748 F. Supp. 2d 531, 542 (E.D. Va. 2010); Gov't Ex. 75, SWGFAST, *Strengthening Forensic Science in the United States: A Path Forward*, (Aug. 3, 2009) at 2 (SWGFAST has been establishing guidelines and standards for the development and enhancement of friction ridge examiners' knowledge, skills, and abilities since 1995."). According to SWGFAST, its "guidelines and standards are routinely quoted in court as evidence of adherence to best practices." Gov't Ex. 75 at 2. SWGFAST has supported the ACE–V method and published standards governing its application. *See, e.g.*, Gov't Ex. 76 and Defendant. Ex. IIII, SWGFAST, *Standards for Examining Friction Ridge Impressions and Resulting Conclusions (Latent/Tenprint)*, (Sept. 13, 2011); Deft's Ex. YYY, *Standard for the Documentation of Analysis, Comparison, Evaluation, and Verification (ACE–V) (Latent)*, SWGFAST (Feb. 12, 2010). Gische testified to this fact as well. *See* Doc. 680 at 19. In fact, SWGFAST has established quality standards for nearly every aspect of fingerprint examination, including *inter alia*, training, documentation, digital imaging, examiner conduct, proficiency testing, blind verification, terminology, and reporting. *See generally* Deft's Exs. WWW through XXXX. Some of these standards were in place in late 2010 when Knoll conducted her fingerprint examination in this case; others have been modified or added. *See generally* Doc. 680 at 103-22.

In addition, in late 2010 the NMDPS laboratory in question here had standard operating procedures ("SOPs") in place governing the identification of latent prints and application of the ACE-V method. *See* Deft's Ex. NN, "New Mexico Department of Public Safety Forensic Laboratories Latent Print Unit Standard Operating Procedures" (July 13, 2009). *See also* Doc. 680 at 198-99, 203-05, 215, 233, 236-38. These standards informed Knoll's forensic work in this case. Testimony by both Gische and Knoll suggests that NMDPS' standard operating procedures were

not only different from, but also perhaps less demanding that, those promulgated by SWGFAST and the FBI.

Certainly, the efficacy of some of the foregoing standards has been questioned by credible sources. For example, the National Academy of Science has stated:

> ACE-V provides a broadly stated framework for conducting friction ridge analysis. However, this framework is not specific enough to qualify it as a validated method for this type of analysis. ACE-V does not guard against bias, is too broad to ensure repeatability and transparency, and does not guarantee that two analysts following it will obtain the same results. For these reasons, merely following the steps of ACE-V does not imply that one is proceeding in scientific manner or producing reliable results.

NRC Report at 142. While it appears SWGFAST has added new guidelines and revised existing ones in response to the NRC Report, which was critical of forensic science generally and fingerprint identification specifically, it also appears that some standards were in place during the latter part of 2010 when the fingerprint examinations in this case were conducted to guide and limit Knoll in her exercise and application of the ACE-V method.

Thus, the Court concludes that this factor weighs in favor of admissibility. *See also United States v. Gutierrez-Castro*, 805 F. Supp. 2d 1218, 1233 (D.N.M. 2011) (Browning, J.) ("The Court finds that there are thus standards that guide and limit the analyst in the exercise of subjective judgments. Indeed, Gutierrez–Castro does not contend that McNutt did not apply the generally accepted methods for fingerprint analysis; rather, his argument is that the generally accepted methods do not, even when applied property, produce reliable results. The Court thus finds that this factor weighs in favor of admissibility.").

5. General Acceptance of Theory

Gische testified that the ACE-V method is generally accepted in the field of fingerprint examination and identification. Doc. 680 at 57-58.

Recently the Seventh Circuit considered whether the ACE-V method of matching latent prints to other latent prints, or to patent prints, has been shown to be reliable and admissible as evidence under the standards for reliability set forth in Federal Rules of Evidence 702 and 703, and *Daubert* and *Kumho Tire*. *See United States v. Herrera*, 704 F.3d 480 (7th Cir. 2013). The court held that it was, reasoning that:

> Fingerprint experts such as the government's witness in this case - who has been certified as a latent print examiner by the International Association for Identification, the foremost international fingerprint organization . . . receive extensive training; and errors in fingerprint matching by expert examiners appear to be very rare, . . . [t]hough the matching process is judgmental rather than scientifically rigorous because it depends on how readable the latent fingerprint is and also on how distorted a version of the person's patent fingerprint is. Examiners' training includes instruction on how to determine whether a latent print contains enough detail to enable a reliable matching to another print. Ultimately the matching depends on subjective judgments by the examiner, but responsible fingerprint matching is admissible evidence, in general and in this case.

Id. at 487 (internal quotations and citations omitted). The court emphasized that "[e]xpert evidence is not limited to 'scientific' evidence, however such evidence might be defined. It includes any evidence created or validated by expert methods and presented by an expert witness that is shown to be reliable." *Id*. (citing *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 150-151 (1999); *Tuf Racing Products, Inc. v. American Suzuki Motor Corp*., 223 F.3d 585, 591 (7th Cir. 2000)).

In addition, federal courts of appeals have consistently concluded that ACE-V is an acceptable and reliable methodology. *See, e.g., United States v. Scott*, 403 Fed.Appx. 392, 398 (11th Cir. 2010) ("The ACE–V method has been in use for over 20 years, and is generally accepted within the community of fingerprint experts.") (unpublished); *United States v. Crisp*, 324 F.3d 261, 268-70 (4th Cir. 2003) (holding that the district court did not abuse its discretion by admitting expert testimony regarding fingerprint evidence because fingerprint evidence satisfies *Daubert*). The Tenth Circuit in *Baines* stated, "while we acknowledge that acceptance by a community of unbiased

experts would carry greater weight, we believe that acceptance by other experts in the field should also be considered. And when we consider that factor with respect to fingerprint analysis, what we observe is overwhelming acceptance." *United States v. Baines*, 573 F.3d 979, 991 (10th Cir. 2009).

In sum, the ACE–V method, although perhaps not entirely worthy of the pedestal on which it has been historically placed, is sufficiently accepted to satisfy this factor, which the Court concludes weighs in favor of admissibility.

6. Conclusion

After weighing and considering all of the foregoing factors under *Daubert* and *Kumho Tire*, the Court concludes that the fingerprint identification testimony, while perhaps not "scientific," is sufficiently reliable to be admitted into evidence at trial.

C. Affidavit and Testimony of Simon Cole

Consistent with his affidavit submitted in support of the present Motion, *see* Gov't Ex. 4, Cole testified at the hearing as to an increasing body of scholarly research shedding doubt on the reliability of latent fingerprint identification. This Court has already ruled that Cole will be permitted to testify at trial. Recognizing Cole's extensive research and writing, and also acknowledging the "liberal standard" for qualifying a witness as an expert, the Court concluded that Cole is qualified by his knowledge and education to testify as an expert in the general field of the reliability of fingerprint identification, based on his extensive review of the literature and his publications in the field. Memorandum Opinion and Order entered April 29, 2013, Doc. 953. As he is not a trained fingerprint examiner, Cole will not be permitted to opine as to the accuracy or reliability of the specific fingerprint identification work conducted in this case.

IV. Admissibility of Knoll's Testimony

Having concluded that fingerprint identification testimony is generally reliable enough to be admitted into evidence, the Court turns to the other factors under Rule 702: (1) the qualifications, knowledge, skill, experience and training of the expert witness; (2) whether the expert's testimony will help the trier of fact to understand the evidence or determine a fact in issue; (3) whether the testimony is based on sufficient facts or data; and (4) whether the witness has reliably applied the principles and methods to the facts of the case.

A. Knoll's Knowledge, Skill, Training, and Experience

The Government intends to offer the expert testimony of Bonnie Knoll, a Supervising Forensic Scientist with the NMDPS Forensic Laboratory. The Court finds that Knoll is qualified as an expert in latent fingerprint analysis. See Generally Gov't Ex. 57. After completing an FBI fingerprinting course in 1999, she took a second course in advanced latent training. Since that time, she has taken many courses in forensic science, at least 16 of them relating to fingerprint identification. Knoll has practiced in the field of latent print examination since 2000, when she joined the Vermont Department of Public Safety Forensic Laboratory specializing in her area of expertise. In 2005, she became affiliated with the NMDPS Forensic Laboratory and in 2008 she became the Supervising Forensic Scientist of the Latent Print and Evidence Sections, responsible for the direct supervision of forensic scientists within the unit. During her years with the NMDPS laboratory, Knoll has been responsible for latent print examination of evidence seized from crime scenes. Knoll is also currently responsible for maintaining quality control within the NMDPS laboratory's latent print unit, assuring accreditation compliance, maintaining and updating standard operating procedures, and providing training for law enforcement and other entities. Ms. Knoll is certified as a latent print examiner through the International Association for Identification (IAI).

The IAI requires recertification every five years and requires an accumulation of 80 hours of continuing education credits as a condition to receive re-certification. Knoll is one of only about 900 IAI certified fingerprint examiners worldwide. Additionally, the NMDPS laboratory conducts annual internal and external proficiency exams, requiring Knoll to take, and pass, two proficiency tests per year. She has never failed a proficiency exam.

Based on the foregoing, the Court concludes that Knoll is qualified as an expert by knowledge, skill, experience, training, or education to testify about the fingerprint identifications and exclusions she made in this case.

B. Helpfulness to the Trier of Fact

The Court concludes that Knoll's testimony would be helpful to the jury in understanding the fingerprint evidence, which is not only extensive and complex, but also requires specific education and training to understand and interpret. That fingerprint evidence, in turn, is relevant to important issues in the case, such as the identities of individuals who came into contact with the Haases, their truck, and various items found inside.

C. Sufficient Facts or Data

Knoll's testimony is based upon sufficient facts or data, as required by Rule 702. The latent prints recovered from the Haases' truck and from other items found either in the truck or in the possession of Defendants, along with exemplar prints from known sources, are precisely the types of information upon which fingerprint examiners base their conclusions.

D. Knoll's Application of the ACE-V Methodology

The final question is whether Knoll reliably applied the ACE-V principles and methods to the facts of this case.

Some of the earliest fingerprints recovered in the case were found on a plastic paper towel

wrapper found in the Haases' truck. Doc. 680 at 211. When these initial fingerprints were recovered from the crime scene, there were no known suspects. Doc. 680 at 206. Knoll developed, photographed, and examined the latent prints, concluding that they contained sufficient information to perform a comparison. *Id*. at 207; 235. Knoll submitted five of those prints to the State of New Mexico's Automated Fingerprint Identification System (NMAFIS), which contains records for over 700,000 individuals. *Id*. at 207-08. Of the five prints, AFIS returned positive results on two. *Id*. at 206-07, 210. These "hits" returned by NMAFIS were for the left middle and left ring fingers of John Charles McCluskey. *Id*. at 210. McCluskey was listed as number one on list of potential matches generated by the AFIS for each of the two prints. *Id*. Knoll then conducted her own comparison of the latent prints to the corresponding fingers on an original tenprint arrest card on file for McCluskey, using the original arrest card from the NMDPS records bureau. *Id*. at 218. After making the comparison, Knoll evaluated it. *Id*. Knoll testified that she follows the NMDPS laboratory's Standard Operating Procedures, which include the ACE-V method that she applied to all of the fingerprint examinations she conducted in this case. Doc. 680 at 199, 203, 218. *See also* Deft's Ex. NN at 13-14. The person at Knoll's laboratory who conducts the verification review follows the ACE-V method as well. Doc. 680 at 216.

At the hearing, McCluskey raised questions regarding the adequacy of Knoll's documentation of her work. In the case of a complex comparison, Knoll saves latent prints with markings on them in her electronic file; she does not include them in her case notes. Doc. 680 at 216. However, none of the prints in this case fall into that category. *Id*. at 216-17. Knoll testified that she did not document in her report what she saw in the latent and tenprints that led her to conclude that McCluskey was the source of the two prints on the plastic paper towel wrapper; rather, in accordance with her laboratory's SOPs, she records that information in her case notes. *Id*. at 212-

13. Knoll further testified that she documents the presence of Level 1 detail in her notes, while other things, including ridge details such as arcs, she marks on the actual item of evidence. *Id*. at 213-14. The laboratory's SOPs do not mandate that Knoll document Level 2 details in her case notes, so she does not do so. *Id*. at 213. Also included in Knoll's notes are AFIS printouts, comparison information, photographs, and a statement regarding another examiner's verification of comparative results. *Id*. at 214. Knoll stated that she does not mark Level 2 details on the prints she give to the other examination for verification because she wants to give that examiner a clean latent impression from which to reach his own conclusion without the risk of being biased by her results. *Id*. at 216, 238; Doc. 683 at 40. Of course, she could take a second photograph of the print and make her markings on that copy, leaving the first copy unmarked for the verifying examiner; however, she chooses not to do so. Doc. 683 at 19-20. Knoll conceded that failing to document Level 2 details is not in accord with SWGFAST guidelines[2] and stated that while SWGFAST may recommend that procedure, SWGFAST does not mandate procedures for the NMDPS forensics laboratory, whose procedures she did follow. *Id*. at 20-27. Knoll further testified that her laboratory uses different terminology than SWGFAST does. *Id*. at 234-35.

Gische also indicated that Knoll did not, at least in some instances, meet SWGFAST or FBI documentation standards. Doc. 680 at 151-62. Cole made a similar observation. Doc. 683 at 148-49. Furthermore, Gische testified that "in order to ensure reliability in a way to measure and to see if all of those things that help to prevent error are being implemented, yes, then those standards, those quality assurance practices, would have to be followed." Doc. 680 at 83. Gische indicated that

[2] *See* Deft's Ex. MMMM at 1("The friction ridge impression alone is not sufficient documentation. The impression or a legible copy shall be annotated or have accompanying notes.")

SWGFAST and the FBI tend to be ahead of other crime labs in terms of implementing the newest policies and procedures, *id*. at 181, and therefore at least some of the SWGFAST guidelines with which Knoll did not comply had not even been promulgated at the time she performed her print examinations in this case in late 2010. *Id*. at 183-84. Gische also clarified that the level of documentation should reflect the level of complexity of the comparison. *Id*. at 188-89.

Through the testimony of its two fingerprint experts, Gische and Knoll, the Government has created something of a conflict. First, Gische testified regarding the importance of standards in documentation of the ACE-V process and stated that standards such as those set forth by SWGFAST and the FBI ensure the reliability of ACE-V. Then, Knoll testified that she did not follow those documentation standards so highly praised by Gische because her laboratory does not require her to do so. The foregoing is certainly relevant to the reliability of Knoll's conclusions and is fair game for cross examination. However, there is no evidence that Knoll failed to follow the documentation requirements set forth in the NMDPS forensic laboratory's SOPs, or that the laboratory's SOPs themselves are so inadequate that they undermine the validity of Knoll's conclusions in this case. Thus, the Court finds that despite any potential deficiencies in Knoll's documentation of her work, on the record currently before it, Knoll did reliably apply the ACE-V method such that her testimony is admissible.

E. Individualization

The question remains as to what degree of certainty Knoll can express her opinions about whether a particular individual can be identified or excluded as the source of any given latent print.

At the hearing, Gische testified that in the past, SWGFAST's standards had required examiners who testified to the existence of a match to state that they had identified the source "to the exclusion of all others." Doc. 680 at 93. *See* Deft's Ex. IIII, SWGFAST, *Friction Ridge*

Examination Methodology for Latent Print Examiners, p. 3 (Aug. 22, 2002) (defining "individualization"). However, SWGFAST has removed that language from its protocols. *Id*. *See also* Deft's Ex. SSSS, SWGFAST, *Individualization/Identification Position Statement* (Mar. 6, 2012) ("The ability of a latent print examiner to individualize a single latent impression, with the implication that they have definitively excluded all other humans in the world, is not supported by research and was removed from SWGFAST's definition of individualization."). The FBI has removed similar terminology from its standards and protocols. Doc. 680 at 169.

The more recent SWGFAST standard states, "Individualization of an impression to one source is the decision that the likelihood the impression was made by another (different) source is *so remote that it is considered as a practical impossibility*." (emphasis added). Deft's Ex. IIII, SWGFAST, *Standards for Examining Friction Ridge Impressions and Resulting Conclusions* (Latent/Tenprint), p. 4 (Sept. 13, 2011); *see also* Doc. 680 at 166. Gische testified, however, that she typically does not use the phrase "practical impossibility" when testifying regarding an identification she has made, but rather would say that she "would not expect to see the same amount of information repeated in a different source." Doc. 680 at 167. Gische clarified that to her, this meant essentially the same thing. *Id*. At the current time, there is no statistical model or study that can quantify the meaning of the term "practical impossibility." *Id*. at 167-68.

Later in the hearing, Knoll testified that when asked how sure she was about a fingerprint identification she had made in this case, she would say that "it is to the exclusion of all others." Doc. 683 at 89. Knoll acknowledged that in her report, she did not qualify any of her opinions because she was not required to do so under NMDPS forensic laboratory procedures. *Id*. at 86. Knoll also acknowledged the contradictory standard promulgated by SWGFAST, Deft's Ex. SSSS, but asserted that it was not binding on her. *Id*. at 90.

In light of the foregoing, Knoll will not be permitted to testify that any individual is the source of a particular print "to the exclusion of all others," or that she is "100% certain" about an identification, or any variant thereof. There simply is no evidence in the record to support such a conclusion. To the contrary, the National Research Council, the FBI, and SWGFAST have all recognized the lack of scientific basis for such testimony and have advised against permitting examiners to express opinions to this level of certainty. Such a conclusion lacks a reliable scientific basis.

However, this leaves the Court with the question of what Knoll will be permitted to say in response to questions about her level of confidence in her conclusions. The Court has already concluded that Knoll's testimony is sufficiently reliable such that it may be presented to the jury, but as discussed elsewhere in this opinion there is no quantifiable measure of that reliability. The SWGFAST suggestion that examiners be permitted to state that the likelihood the impression was made by another (different) source is "so remote that it is considered as a practical impossibility" is not unreasonable, under the circumstances presented, and therefore the Court will allow Knoll to say as much.[3] Of course, McCluskey has ample fodder for cross examination of Knoll.

Finally, the Court agrees with McCluskey that Knoll may not testify as to inconclusive results, such as statements in her report that a particular latent print could be not be identified to a particular individual. To be admissible as relevant evidence under the Federal Rules of Evidence, evidence (expert or otherwise) must make a fact that is of consequence to the determination of the action more or less probable than it would be without the evidence. Fed. R. Evid. R. 401. Because such inconclusive findings do no make a fact more or less probable than it would be without them,

[3] This is similar to the limitation the Court placed on the testimony of Katharina Babcock, the firearms examiner.

they are not relevant may not be admitted into evidence.

IV. OTHER ARGUMENTS

McCluskey also argues, in shotgun fashion, that the "firearm identification" evidence (the Court assumes that this is a typographical error, and that McCluskey meant "fingerprint evidence") should be excluded because its admission would violate his Fifth Amendment right to due process, his Sixth Amendment rights to a fair trial and to confront witnesses against him, and his Eighth Amendment guarantee of heightened reliability in a death penalty case. Doc. 419 at 8. McCluskey has raised these arguments in shotgun fashion, without any supporting rationale, authority, or explanation. Because McCluskey fails to cite specific, persuasive authority, and the Court need not develop his conclusory arguments for him or address arguments unsupported by authority, the Court declines to address these points. *See Cahill v. American Family Mut. Ins. Co.*, 610 F.3d 1235, 1238-39 (10th Cir. 2010); *Arizona Pub. Serv. Co. v. United States EPA*, 562 F.3d 1116, 1130 (10th Cir. 2009).

IT IS THEREFORE ORDERED that McCluskey's *Motion to Exclude Fingerprint Identification Evidence and Request for Daubert Hearing* [Doc. 419] is **DENIED** and Bonnie Knoll may testify at trial as to all matters proposed, with the limitation that she may not state a conclusion that any latent print was identified and individualized to the exclusion of all others.

UNITED STATES DISTRICT JUDGE